

WHAT IS CLAIMED IS:

1. A failure diagnostic device of an evaporative gas purge control system, comprising:

5 an evaporative gas passage to communicate a fuel tank with a canister to adsorb an evaporative fuel generated in the fuel tank;

a purge passage to communicate the canister with an engine intake system;

10 a pressure control valve interposed in the evaporative gas passage and opened at a valve opening according to a pressure difference between the pressure in the fuel tank and a reference pressure if the pressure in the fuel tank is higher than the reference pressure;

15 a reference pressure chamber to set the reference pressure of the pressure control valve connected to the canister;

purge control means interposed in the purge passage to control an opening and a closing of the purge passage;

20 a drain valve to open and close a fresh air introducing port opened in the canister; and

tank internal pressure detecting means to detect the pressure in the fuel tank;

diagnosis start means to detect that the drain valve is  
25 opened from an energized state to the drain valve, and open

the purge control means; and

failure determination means to compare the pressure in the fuel tank detected by the tank internal pressure detecting means with a closed sticking determination pressure of the drain valve, and to determine a closed sticking of the drain valve if the pressure in the fuel tank is lower than the closed sticking determination pressure of the drain valve.

10        2. The failure diagnostic device according to Claim 1, wherein;

the failure determination means determines the closed sticking of the drain valve if the pressure in the fuel tank is lower than the closed sticking determination pressure of the drain valve and a state thereof is maintained for a predetermined time.

3. A failure diagnostic device of an evaporative gas purge control system, comprising:

20        an evaporative gas passage to communicate a fuel tank with a canister to adsorb an evaporative fuel generated in the fuel tank;

a purge passage to communicate the canister with an engine intake system;

25        a pressure control valve interposed in the evaporative

gas passage and opened at a valve opening according to the pressure difference between the pressure in the fuel tank and a reference pressure if the pressure in the fuel tank is higher than the reference pressure;

5        a reference pressure chamber to set the reference pressure of the pressure control valve connected to the canister;

        purge control means interposed in the purge passage to control an opening and a closing of the purge passage;

10       a drain valve to open and close a fresh air introducing port opened in the canister; and

        a tank internal pressure detecting means to detect the pressure in the fuel tank;

        purge execution means to purge the evaporative fuel by  
15       opening the purge control means and the drain valve; and

        failure determination means to determine that the drain valve is normal if the pressure in the fuel tank detected by the tank internal pressure detecting means while purging the evaporative fuel is higher than a drain valve normality  
20       determination pressure.

4. The failure diagnostic device according to Claim 3, wherein;

        the failure determination means determines that the  
25       drain valve is normal if the pressure in the fuel tank is

higher than the drain valve normality determination pressure and a state thereof is maintained for a predetermined time.

5        5. A method of diagnosing a failure of an evaporative gas purge control system having an evaporative gas passage communicating a fuel tank with a canister, a purge passage communicating the canister with an engine intake system, and a pressure control valve interposed in the evaporative gas passage and operated according to a pressure difference  
10        between the pressure in the fuel tank and a reference pressure,

         the method comprising the steps of:

         controlling the purge passage by opening and closing thereof;

15        opening and closing a fresh air introducing port opened in the canister by a drain valve;

         detecting the pressure in the fuel tank;

         detecting the drain valve is opened from a energized state to the drain valve and opening the purge passage; and

20        comparing the pressure in the fuel tank with a closed sticking determination pressure of the drain valve and determining a closed sticking of the drain valve if the pressure in the fuel tank is lower than the closed sticking determination pressure of the drain valve and a state  
25        thereof is maintained for a predetermined time.

6. A method of diagnosing a failure of an evaporative gas purge control system having an evaporative gas passage communicating a fuel tank with a canister, a purge passage communicating the canister with an engine intake system, and  
5 a pressure control valve interposed in the evaporative gas passage and operated according to a pressure difference between the pressure in the fuel tank and a reference pressure,

the method comprising the steps of:

10 controlling the purge passage by opening and closing thereof;

opening and closing a fresh air introducing port opened in the canister by a drain valve;

detecting the pressure in the fuel tank;

15 executing to purge the evaporative fuel by opening the purge passage and the drain valve; and

determining the drain valve is normal if the pressure in the fuel tank while purging the evaporative fuel is higher than a drain valve normality determination pressure  
20 and a state thereof is maintained for a predetermined time.